

REMARKS

Applicants have carefully considered the January 11, 2006 Office Action, and the amendments above together with the comments that follow are presented in a bona fide effort to address all issues raised in that Action and thereby place this case in condition for allowance. Claims 20-31 are pending in this application. In response to the Office Action dated January 11, 2006, claims 20, 22, 23, 25, 26, 27, 28, 30 and 31 have been amended. Care has been exercised to avoid the introduction of new matter. Adequate descriptive support for the present Amendment should be apparent throughout the originally filed disclosure as, for example, the depicted embodiments and related discussion thereof in the written description of the specification. Applicants submit that the present Amendment does not generate any new matter issue. Entry of the present Amendment is respectfully solicited. It is believed that this response places this case in condition for allowance. Hence, prompt favorable reconsideration of this case is solicited.

Claims 22 and 26-29 were rejected under the first paragraph of 35 U.S.C. § 112 for lack of adequate enabling support. Applicants request reconsideration and withdrawal of the rejection in view of the foregoing claim amendments and the following remarks.

Claims 22 and 26 have been amended to describe that the nonlinear refractive index of the optical fiber for Raman amplification does not become lower than 3.5×10^{-20} [m²/W]. In other words, the nonlinear refractive index does not become less than 3.5×10^{-20} (m²/W).

Claims 27 and 28 have been amended to remove the limitation concerning the optical frequency band. Therefore, the rejection is moot with respect to these claims. Moreover, the value “12.48 THz” is the upper limit of the optical frequency spacing. The claimed variables “m” and “n” mean the number of channels and, therefore, there is no instance when these

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variables (“m” and “n”) take a negative value. In particular, the number of the pumping channels is defined as two or more in claim 23, and therefore it is clear that the variable “m” is two or more.

With respect to claim 29, Applicants submit that one having ordinary skill in the art would have no difficult practicing the claimed invention given the guidance of the disclosure, without undue experimentation, and the Examiner has not even attempted to establish otherwise. In rejecting a claim under the first paragraph of 35 U.S.C. § 112 for lack of adequate enabling support, it is incumbent upon the Examiner to establish a basis in fact and/or cogent technical reasoning to support the ultimate legal conclusion that one having ordinary skill in the art would not be able to practice the claimed invention, armed with the supporting specification, without undue experimentation. *In re Cartwright*, 165 F.3d 1353, 49 USPQ2d 1464 (Fed. Cir. 1999); *In re Brana*, 51 F.2d 1560, 34 USPQ2d 1436 (Fed. Cir. 1995); *In re Marzocchi*, 439 F.2d 220, 169 USPQ 367 (CCPA 1971). Applicants emphasize that a patent disclosure is directed to one having ordinary skill in the art. *In re Howarth*, 654 F.2d 103, 210 USPQ 589 (CCPA 1981). Therefore, the rejection of claim 29 is not legally for at least this reason.

Applicants, therefore, submit that the imposed rejection of claims 22 and 26-29 under the first paragraph of 35 U.S.C. § 112 for lack of adequate enabling support is not factually or legally viable and, hence, solicit withdrawal thereof.

Claim 20 was rejected under 35 U.S.C. § 102(e) as being anticipated over Adams (U.S. Pat. No. 6,785,472, hereinafter “Adams”). Applicants respectfully traverse the rejection.

Claim 23 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Adams in view of Agrawal (Fiber-Optic Communication Systems dated May 28, 2002, hereinafter “Agrawal”). Applicants respectfully traverse the rejection.

Dependent claim 21 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Adams in view of Muro (U.S. Pat. No. 6,823,107, hereinafter “Muro”). Applicants respectfully traverse the rejection.

Dependent claims 24-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Adams in view of Agrawal and further in view of Muro. Applicants respectfully traverse the rejection.

Claim 30 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Adams in view of Eggleton (U.S. Pat. No. 6,768,577, hereinafter “Eggleton”). Applicants respectfully traverse the rejection.

Dependent claim 31 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Adams in view of Eggleton and further in view of Muro. Applicants respectfully traverse the rejection.

Independent claims 20, 23 and 30 have been amended to clarify the following distinctions between the present claimed subject matter and the Adams patent: (a) the claimed optical fiber for Raman amplification constitutes at least part of the claimed optical transmission line; and (b) the plurality of pumping channels included in the Raman amplification pumping light are assigned to the same part of the optical transmission line.

Independent Claim 20

Adams, at col. 6, lines 55-58, describes that as the network expands by the nodes, further Raman pumps are readily added, as required, emitting at existing pump wavelengths or at new pump wavelength. In other words, Adams merely teaches that each of the Raman pumps is assigned individually to one of plural transmission lines constituting a network. Thus, Adams does not teach or remotely suggest that two or more Raman pumps are respectively used in the

same part of the transmission line. Further, even when two or more Raman pumps are used for a network, it is clear that only one Raman pump is used to one fiber laid between two nodes. In contrast, the claimed subject matter uses two or more Raman pumps in the same part of the transmission line.

The above argued differences between the claimed subject matter of claim 20 undermines the factual determination that Adams discloses the system identically corresponding to that claimed. *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 230 U.S.P.Q. 86 (Fed. Cir. 1986). Applicants, therefore, submit that the imposed rejection of claim 20 under 35 U.S.C. § 102 for lack of novelty as evidenced by Adams is not factually viable and, hence, solicit withdrawal thereof.

Dependent Claim 21

Dependent claim 21 is substantially free from the applied art in view of its dependency from claim 20. Muro fails to remedy the above argued deficiency of Adams. Applicants further submit that neither Adams nor Muro discloses or suggest the claimed combination of a directly-modulation laser and a negative chromatic dispersion fiber. Thus, even if combined, the references fail to teach every limitation of claim 21.

Independent Claim 23

Applicants submit that the claimed Raman amplifier, in which an optical frequency spacing between the adjacent pumping channels is 4,680 GHz or more, is neither disclosed or suggested in Adams or Agrawal. See pages 249-250 of Agrawal. The claimed invention requires that the optical frequency spacing between the adjacent pumping channels is 4,680 GHz or more, and it is legally erroneous to ignore any claim limitation. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837

F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988). The only motivation for such a limitation is Applicants' own disclosure. Applicants' disclosure, however, is forbidden territory for the Examiner to obtain the requisite motivation for combining the applied prior art. *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 227 USPQ 337 (Fed. Cir. 1985). Accordingly, Adams, alone or in combination with Agrawal, fails to teach every limitation of claim 23.

Dependent claims 24-25

Dependent claims 24-25 are substantially free from the applied art in view of their dependency from claim 23. Agrawal and Muro fail to remedy the above argued deficiency of Adams. Thus, even if combined, the references fail to teach every limitation of claims 24-25.

Independent Claim 30

Applicants incorporate herein the arguments previously advanced in traversal of the rejection of claim 20 under 35 U.S.C. § 102(e) predicated upon Adams. Claim 30 includes the same structure differences as argued above for claim 20 and, therefore, Applicants submit that claim 30 is substantially free from the applied art for the same reasons as claim 20. The secondary reference to Eggleton does not cure the argued deficiencies of Adams. Ergo, even if the applied references are combined as suggested by the Examiner, and Applicants do not agree that the requisite realistic motivation has been established, the claimed invention will not result.

Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988).

Dependent Claim 31

Dependent claim 31 is substantially free from the applied art in view of its dependency from claim 30. Applicants further submit that neither Eggleton nor Muro remedy the argued deficiency of Adams. Thus, even if combined, the references fail to teach every limitation of claim 31.

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Applicants, therefore, respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. §§ 102 and 103.

Applicants gratefully acknowledge the Examiner's indication of allowable subject matter. Claim 22 and 26-29 were indicated as being allowable if recast in independent form and rewritten to overcome the rejection under 35 U.S.C. § 112. However, for the reasons set forth above, each of claims 20-31 are patentably distinct over the applied art.

It is believed that all pending claims are now in condition for allowance. Applicants therefore respectfully request an early and favorable reconsideration and allowance of this application. If there are any outstanding issues which might be resolved by an interview or an Examiner's amendment, the Examiner is invited to call Applicants' representative at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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